3. Danielle

Program Name: Danielle.java **Input File: danielle.dat**

Danielle recently learned about different numerical bases, namely binary, octal, decimal, and hexadecimal. Danielle is already comfortable with converting between bases but wanted to make an extension of this to reflect her exposure to music counting patterns. From her high school choir experience, she knows that, in a typical 4/4 pattern, musicians count beats within a measure as follows:

1, 2, 3, 4; 2, 2, 3 4; 3, 2, 3, 4; 4, 2, 3, 4; 5, 2, 3, 4; 6, 2, 3, 4; …

However, Danielle is curious as to what will happen once the first number exceeds 9 (and therefore has more than one digit). Unfortunately for Danielle, she has never been able to figure this out in her choir class. Therefore, she has taken it upon herself to figure out exactly what this should look like.

She has devised the rule that, after a number in a given significant position reaches the value 9, attempting to add one more to that will instead reset that number back to its original value, and increment the number in the next significant position. Note that, unlike a typical mathematical base/counting system, the least significant digit is the left-most digit, while the most significant digit is the right-most digit. Moreover, not all positions reset back to the same number when they go past the maximum value (in this case, 9). Depending on how significant a digit is, it will reset to a different number. The least significant digit will reset back to 1, the second least-significant digit will reset back to 2, the third least-significant digit will reset back to 3, and the most-significant digit will reset back to 4. Help Danielle develop a program that converts from her musical notation back to the measure she is currently on.

Input: The first line of input will consist of a single integer n ($1 \leq n \leq 500$) denoting the number of test cases to follow. The next n test cases will consist of a single line that denotes the musical notation of which beat of which measure Danielle has currently counted to. This line will be in the format of "d_1, d_2, d_3, d_4" where d_1, d_2, d_3, and d_4 are all integers and $d_1 \in [1,9]$, $d_2 \in [2,9]$, $d_3 \in [3,9]$, and $d_4 \in [4,9]$.

Output: For each of Danielle's n requests, print out the which measure she has counted to.

Sample input:

```
11
1,2,3,4
2,2,3,4
3,2,3,4
4,2,3,4
9,2,3,4
1,3,3,4
2,3,3,4
9,9,3,4
1,2,4,4
9,9,9,4
1,2,3,5
```

Sample output:

```
1
2
3
4
9
10
11
72
73
504
505
```